

Polyimides

Wire insulations and coatings

Datasheet

We offer a variety of polyimide coatings that can be applied to all our alloy offerings. Polyimides are chosen in applications because of their excellent resistance to chemicals, superior abrasion resistance, and superior thermal performance. Because of this combination of features, they are typically chosen for use in the most rigorous of applications.

Polyimides are applied in the form of polyamic acid solutions, of various chemistries, and through heat this solution is converted to a continuous coating film on the wire.

Our polyimide offerings are used in many applications, ranging from magnet wire production to the most sensitive medical applications. Consult with an Applications Specialist for assistance with selecting the appropriate material for your application.

PAC

PAC

This coating material meets the requirements of NEMA MW1000. PAC is a blend of Type I and Type II polyimide chemistry with a Thermal Index of 251 °C. Typical cured properties are found below.

Electrical Properties	NEMA MW1000	ASTM D1676	IEC 851	JIS C3003	18 AWG, MW16-C, Single Build
Dielectric Strength @ 25 °C	3.8.1.1	69-75	13-4.2,3,4	11.1	9.2 kV
Dissipation Factor @ 260 °C - 1kHz		107-114			0.02
Tangent Delta (DIN)					277 °C
Mechanical Properties	NEMA MW1000	ASTM D1676	IEC 851	JIS C3003	18 AWG, MW16-C, Single Build
Adherence and Flexibility					
No Snap	3.3.1.1	141-148		8.1	Pass 1d
20% Snap	3.3.1.1	141-148	8.5.1.1	9.1	Pass 1d
Percent	3.4.1.1	122-129	6-3.0		38

Elongation at Break					
Cut-Through Temperature	3.50.1.1	61-68			> 500 °C
Mandrel at Break	3.4.1.1	122-129			Pass 2d
Heat Shock (20% Stretch @ 260 °C)	3.5.1.1	156-162	9-3.1	14.1	Pass 3d
Scrape Resistance, Unidirectional	3.59.1.1	170-177	11-6.1	10.2	1275 grams

PAC 28

PAC 28

This coating material meets the requirements of NEMA MW16C. PAC is a modified Type I polyimide enamel with a Thermal Index of 241 °C. Typical cured properties are found below.

Electrical Properties	NEMA MW1000	ASTM D1676	IEC 851	JIS C3003	18 AWG, MW16-C, Single Build
Dielectric Strength @ 25 °C	3.8.1.1	69-75	13-4.2,3,4	11.1	10.2 kV
Dissipation Factor @ 260 °C - 1kHz		107-114			0.09
Tangent Delta (DIN)					279 °C
Mechanical Properties	NEMA MW1000	ASTM D1676	IEC 851	JIS C3003	18 AWG, MW16-C, Single Build
Adherence and Flexibility					
No Snap	3.3.1.1	141-148		8.1	Pass 1d
20% Snap	3.3.1.1	141-148	8.5.1.1	9.1	Pass 1d
Percent Elongation at Break	3.4.1.1	122-129	6-3.0		30
Cut-Through Temperature	3.50.1.1	61-68			> 500 °C
Mandrel at Break	3.4.1.1	122-129			Pass 2d

Heat Shock (20% Stretch @ 260 °C)	3.5.1.1	156-162	9-3.1	14.1	Pass 3d
Scrape Resistance, Unidirectional	3.59.1.1	170-177	11-6.1	10.2	1290 grams

PAC 19

This coating material meets the requirements of NEMA MW16C. PAC is a modified Type I polyimide enamel with a Thermal Index of 243 °C. Typical cured properties are found below.

Electrical Properties	NEMA MW1000	ASTM D1676	IEC 851	JIS C3003	18 AWG, MW16-C, Single Build
Dielectric Strength @ 25 °C	3.8.1.1	69-75	13-4.2,3,4	11.1	12.0 kV
Dissipation Factor @ 220 °C - 1kHz		107-114			0.02
Tangent Delta (DIN)					245 °C

Mechanical Properties	NEMA MW1000	ASTM D1676	IEC 851	JIS C3003	18 AWG, MW16-C, Single Build
Adherence and Flexibility					
No Snap	3.3.1.1	141-148		8.1	Pass 1d
20% Snap	3.3.1.1	141-148	8.5.1.1	9.1	Pass 1d
Percent Elongation at Break	3.4.1.1	122-129	6-3.0		30
Cut-Through Temperature	3.50.1.1	61-68			> 500 °C
Mandrel at Break	3.4.1.1	122-129			Pass 2d
Heat Shock (20% Stretch @ 260 °C)	3.5.1.1	156-162	9-3.1	14.1	Pass 3d
Scrape Resistance, Unidirectional	3.59.1.1	170-177	11-6.1	10.2	1400 grams

PAC 84

SPC uses a specially formulated polyimide powder, then blends this powder with a proprietary solvent blend, for use in a variety of coating applications. This coating technology offers insignificant impact on base alloy mechanical properties, because the necessity to initiate imidization isn't necessary with the use of this product. However, the outstanding properties of polyimide films are still completely recognized with the finished coated product. This material has a glass transition temperature greater than 300 °C, decomposes at temperatures greater than 550 °C, and it's Dielectric Strength (approximately 10.0 kV per mil) is comparable to wire coated with traditional magnet wire enamels.

PAC 25

A polyimide specifically engineered for use in microelectronic applications, SPC applies this material to a variety of base metals. Typical applications include: coated wires used in balloon catheter manufacturing and coated wires used for brain mapping electrode manufacturing.

PAC 51

A polyimide that has unique properties. It is soluble in traditional solvents used in polyimide manufacturing, but when exposed to temperatures above its softening point of 250 °C, it becomes insoluble, yet retains characteristics of a traditional thermoplastic. The material is also biologically inert, allowing it to be used in a variety of medical applications.

Disclaimer:

Recommendations are for guidance only, and the suitability of a material for a specific application can be confirmed only when we know the actual service conditions. Continuous development may necessitate changes in technical data without notice. This datasheet is only valid for Alleima materials.